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Fleet Readiness Center Mid-Atlantic Worker Cost Comparison

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June 2012

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FLEET READINESS CENTER MID-ATLANTIC WORKER COST COMPARISON

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Submitted in partial fulfillment of the requirements for the degree of

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from the

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This report creates a financial view of billets at Fleet Readiness Center Mid-Atlantic (FRCMA). FRCMA is the largest Intermediate Maintenance Facility in the U.S. Navy. FRCMA provides maintenance and repair support to aviation squadrons, and is staffed by military, civilian, and contract employees. This report conducts an analysis of direct and indirect costs to build a wage comparison between a military, contractor, and civilian wage employee. This analysis uses a single pay grade comparison. All available direct and indirect costs are aggregated, and these costs are traced as accurately as possible to each billet. An analysis of various accounting methods for cost tracing and allocation is conducted, along with the methods for tracing and allocating indirect and direct costs to each comparative pay category. A focus on labor costs and overhead allocation is included, along with an analysis of appropriation categories.

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I. INTRODUCTION

A. PURPOSE

Department of Defense (DoD) organizations are often very diverse, both in what they do and how they do it. The diversity of the organization, combined with the complexity of the mission, often causes difficulty in analyzing the costs associated with running the organization. Managers of DoD organizations require knowledge of where and how costs occur. Given the expected decrease in the DoD budget, understanding where and how costs occur can help managers control costs within their organization in an environment of decreased funding.

Aggregating costs associated with accomplishing the mission enables cost control at Fleet Readiness Center Mid-Atlantic (FRCMA). FRCMA is the largest Intermediate and Depot Maintenance Facility in the U.S. Navy. FRCMA is composed of several detachments which include Oceana, Norfolk, Washington (D.C.), New Orleans, and Patuxant River. The senior leadership of FRCMA is located at Naval Air Station Oceana in Virginia Beach, Virginia. Finance and cost analysis for FRCMA is conducted in Oceana, with more high level accounting and finance occurring at FRC Southeast (FRCSE) in Jacksonville, Florida.

FRCMA employs military, civilian, and contract employees to accomplish the task of maintenance and repair of naval aircraft. Each category of employee incurs separate and different costs. The intent of this report is to identify the labor costs of each of the three types of employees. The objective of the report is not to show which employee is cheaper and, conversely, which is more expensive. Further analysis, as detailed later in the conclusion, could provide a more refined answer to the question of which employee is more and less expensive. The objective of this report is to make the methods of tracing indirect costs and the tracing of indirect costs to each of the three types of employees more transparent. To facilitate this understanding, this report reviews standard accounting techniques for allocating indirect costs. Also, this report reviews Congressional funding appropriations with the intent to form an appreciation of the

complexity of paying for costs associated with the three types of employees. Finally, this report attempts to provide a managerial accounting view of labor costs associated with activities at FRCMA.

B. RESEARCH OBJECTIVES

The intent of this report is to provide a managerial or cost accounting view of labor costs associated with FRCMA. To facilitate a transparent labor analysis, this report examines some identifiable costs of operating FRCMA. Costs, which occur directly and indirectly with the operations within FRCMA, are included in this report for tracing purposes. The objective of including these costs is to give managers visibility in costs identified and to give an appreciation of the limits of scope of this report.

This report creates a basic wage model for military, contractor, and civilian employees. This model is used to show assumptions, allocation rates, and levels of costs to each employee category. Also, the model provides a framework for the paper's recommendations and conclusions, and provides a reference model for future research. The intent is not to provide a sole model for use in all FRC applications, but to provide one perspective on the costs associated with the organization's employees.

This report analyzes various methods for tracing indirect costs of FRC Mid-Atlantic. Indirect costs are a normal and necessary part of operating the organization. The tracing of those costs provides an appreciation of how costs behave and potentially how to control those costs. Methods for tracing overhead vary across organizations. This report provides one perspective on the tracing of identified costs. The analysis can potentially be helpful in future research or help provide the data necessary to develop additional models.

This report is divided into seven main sections. Sections I and II describe the purpose, objectives, and background of labor analysis at FRCMA. Section III is a short literature review of accounting terms and methods which are utilized in this report. Section IV builds a burdened labor rate for the three types of employees at FRCMA.

Section V presents an analysis of other costs associated with labor. Section VI presents limits of research and model parameters of this report. Section VII presents conclusions and recommendations for further study, which are based on the findings in Section V.

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II. BACKGROUND

A. CONGRESSIONAL APPROPRIATION

1. Navy Working Capital Funds (WCFs)

FRCMA is funded by a Working Capital Fund (WCF). Funding employee pay within the FRC's varies due to their status as WCF's. The WCF does not receive yearly appropriations from Congress for civilian and contractor pay. A WCF receives an initial appropriation from Congress which establishes the operation. The WCF bills its customers for services provided and those revenues support the operation.

> The DWCF must sell services to customers utilizing rates (stabilized rates) for goods and services to recover cost of operations. The stabilized billing rates are established during the WCF's budget process and are set to break even (make no profit or loss) over the long run…A significant challenge of the DWCF activities is that they must stabilize their billing rates for an entire fiscal year…the DWCF must predict all costs of resources to produce the services far in advance of the fiscal year. (American Society of Military Comptrollers, 2011)

The WCF should strive to neither make nor lose money in the long run. WCF funds are termed revolving funds (American Society of Military Comptrollers, 2011). The WCF sets rates for services to be provided and builds a budget based on planned revenue received from those services. The standard yearly rate provides stability for the customers, in that the rates for services do not change throughout the year. Actual revenues are compared with budgeted revenues, and the WCF changes pricing for services for the following year. This change in pricing should attempt to drive losses or gains to zero in the long term. The WCF attempts to stabilize prices "during the execution period to protect customers from unforeseen fluctuations that would impact their ability to execute the programs approved by Congress" (American Society of Military Comptrollers, 2011, p. 2.1.65).

One objective of the WCF is to demonstrate or identify the true cost of services rendered to the Department of Defense. Cost visibility is important to Congress and the DoD, and the recovery of those costs is important to the WCF. The understanding of

how direct and indirect costs accumulate and how they are distributed is vitally important to the WCF. It is critical that the WCF accurately track direct and indirect costs as these costs are utilized to develop a billing rate. Distributing costs incorrectly or not accounting for all costs could distort the true cost of the product the WCF is offering. Improper cost distribution could make the products marketed by the WCF incorrectly priced (Naval Postgraduate School, 2011, pp. 107–109).

2. Military Appropriation

Military personnel receive pay from the Military Personnel Navy and Marine Corps (MPN, MPMC) Congressional appropriation. This appropriation is a yearly appropriation, and needs to be passed each year for military personnel to receive pay. This appropriation funds officer and enlisted pay, bonuses, allowances, and moves. Those military personnel at FRCMA Norfolk receive their pay and allowances from this appropriation. There are two exceptions within the FRCMA. The Commanding Officer and the Production Officer are two WCF billets. The WCF reimburses the government for the salary cost of those two positions. All other military members, though, are funded outside of the WCF (Naval Postgraduate School, 2011, p. 97). Generally, funds used to build facilities for military activities originate from the Military Construction Appropriation (MCON). Equipment for ship support, aviation support, supply support equipment, and spares and repair parts originate from the Other Navy Procurement Appropriations (OPN). Administrative expenses, TAD travel, depot maintenance and fuel are funded through the Operations and Maintenance Navy (O&MN) Appropriations. Thus, the WCF customer uses O&MN funds to pay for services rendered by the WCF depot maintenance (Naval Postgraduate School, 2011, p. 97). No O&MN appropriations can be used by the WCF to fund its activities, nor can any money from the WCF be used to augment Navy Appropriations.

III. LITERATURE REVIEW

A. UNDERSTANDING COSTS

1. Direct Costs, Indirect and Overhead

Federal Acquisition Regulation (FAR) 31.202 defines a direct cost as "any cost that can be identified specifically with a particular cost objective" (Defense Systems Management College, 1999, p. 2-1). A cost objective is "any function for which cost is accumulated," (Fultz, 1980, p. 2) or as a "function, organizational subdivision, contract, or other work unit for which cost data are desired and for which provisions are made to accumulate and measure the cost of processes, products, jobs, capitalized projects, etc." (Defense Systems, 1999, p. 2-1). Direct costs include salaries and wages of personnel who directly or physically create the product or service an organization sells. Direct costs also include the materials or services "incorporated into the product or the production process" (Oyer, 2005, p. 45). Direct costs can be divided into several categories. Direct labor is work that is "readily identified with the end product" (Defense Systems, 1999, p. 2-2). Generally, projects are identified as cost objectives, and the labor used in fabrication (or other direct work) is described as direct labor. Direct Materials refer to "all material costs that are used in making a product and that are directly associated with a change in the product" (Defense Systems, 1999, p. 2-2). Costs which are not materials or labor but still directly attributable to a cost objective are defined as other direct costs. Other direct costs "have all the properties of direct materials or direct-labor cost, yet it may or may not be a tangible part of the final product" (Defense Systems, 1999, p. 2-2). If a cost is identified as directly attributable to the cost objective, but does not fit into direct labor or materials, it can be defined as other direct costs. Other direct costs (ODC) or charges are "not generally considered a major component of the product, nevertheless ODC benefits a particular cost objective, can be measured, and the amount of the cost is significant enough to warrant its tracking" (Fultz, 1980, p. 7).

FAR 31.203 defines an indirect cost as "any cost not directly identified with a single, final cost objective; but it is identified with two or more cost objectives or an

intermediate cost objective" (Defense Systems, 1999, p. 2-2). Indirect costs are generally harder to identify in that these costs could relate to multiple activities within the organization. It is also possible some costs are "not susceptible to measurement at the unit of output level" and could be classified as indirect (Oyer, 2005, p. 45). Indirect costs will generally fall into two categories: overhead and general and administrative expense (G&A) (Defense Systems, 1999, p. 2-3). Once separated and traced as accurately as possible, indirect costs can be added to direct costs to provide a more accurate sense of total costs related to a cost objective.

Overhead costs are indirect in nature, as they generally apply to a specific part of the facility but not necessarily only attributable to one product. Overhead are "expenses incurred for the common good of several cost objectives and which cannot be reasonably or cost-effectively charged directly to specific cost objectives, and those expenses that are so minor as to make it impractical for both cost and time reasons to charge them directly to a particular cost objective" (Fultz, 1980, p. 9). These indirect costs are generally accumulated into a "pool" of costs. Overhead costs can be placed into one pool or separated into several, depending on the nature of the organization and level of complexity desired. "Generally, the accuracy of cost information and management visibility are improved by the introduction of additional indirect-cost pools" (Defense Systems, 1999, p. 3-1). Overhead can be broken down into several cost pools such as engineering, manufacturing, products, and materials. Overhead for FRCMA will be analyzed in Section V.

General and administrative (G&A) expenses refer to "those expenses necessary for the general overall operation of the business" (Fultz, 1980, p. 11). They are also defined as expenses that "represent the cost of activities necessary to the overall operation of the business as a whole, but a direct relationship to any particular cost objective cannot be shown" (Defense Systems, 1999, p. 3-4). Examples of these costs include management costs, salaries of administrative personnel, office supplies, legal expenses, human resources, and accounting. The costs associated with G&A are traced as accurately as possible to the cost objectives for FRC. The proper tracing of G&A is debatable and possibly controversial. Therefore, various methods are possible, and the

assumptions used for tracing in this report are discussed in Section V. The intention of discovering and separating indirect costs is to "improve the visibility of difficult-to-control costs and facilitates the monitoring of similar types of expenses" (Defense Systems, 1999, p. 3-1).

2. Cost Pools and Allocation

When indirect costs are discovered, those costs can be separated into cost pools. A cost pool is a grouping of similar expenses. The grouping of these expenses into a similar pool "permits better expense control by management and facilitates cost analysis", but there is no "one right way to group these expenses" (Fultz, 1980, p. 16). Managers must pool indirect costs in a logical and consistent manner, but the determination of number and complexity of cost pools is a management decision based on needs. Some guidance to managers comes from Cost Accounting Standards and standard cost distribution techniques which are detailed below.

The Cost Accounting Standards Board (CASB) was established to ensure fairness in government procurement. It was also "tasked to issue rules, regulations, and standards aimed at achieving uniformity and consistency in the cost accounting practices that were followed by defense contractors and subcontractors" (Defense Systems, 1999, p. 7-1). There are several rules which attempt to standardize the accumulation of costs. Cost Accounting Standard (CAS) 401 directs "(1) classification of elements or functions of costs as direct or indirect, (2) the indirect-cost pools to which each element or function of cost is charged, and (3) the methods of allocating indirect costs to the contract" (Defense Systems, 1999, p. 7-3). It is important that when distributing costs, an established or agreed to method is used consistently. Managers can define the organization's method of cost distribution based on control systems, performance evaluations, or accounting standards. Though, managers should make the cost distribution methods as accurate as possible for financial accounting and profitability concerns. Both the Federal Acquisition Regulations and the CAS "emphasize the need for consistent allocation of costs incurred"

when distributing direct and indirect costs (Oyer, 2005, p. 48). Although the CAS discusses allocation, the goal in this report in developing a model is to trace as accurately as possible indirect costs.

Standard cost distribution techniques help managers properly assign overhead costs. Initially, overhead costs need to be grouped together or pooled. Each overhead pool is distributed to a cost objective "in a reasonable proportion to the beneficial or causal relationship of the pool(s) to cost objectives" (Oyer, 2005, p. 46). It is preferable to assign costs based on a direct cause and effect relationship. For example, if a company buys a corporate car for salesmen to use on trips, the costs associated with this car are likely to be distributed to an overhead cost pool. The costs associated with the company car are related to many of its products, not just one. Thus, the overhead costs associated with this car would be distributed to various departments using some form of a cost driver. A cost driver is a factor that causes overhead costs, in that they are activities that directly influence the indirect cost as it relates to the direct cost. The cost driver should be linked to the overhead cost as closely as possible. In the case of a company car, the number of salespeople using cars could be a cost driver, but the company could instead use a predetermined overhead rate. While the company car example may have an identifiable cost driver, not all overhead costs are easily linked with specific cost objectives. Therefore, it may be beneficial, based on efficiency, for the organization to spread the overhead costs among various cost objectives. While it may be ideal to track all indirect costs precisely, the cost of doing so may be greater than the benefit. "Ideally, a cost allocation base reflects cause and effect relationships between resource spending and use, but determining these cause and effect relationships could be difficult and costly" (Hilton, Maher, & Selto, 2008, p. 379). Nevertheless, a predetermined overhead rate is used that does not actually have a cause and effect relationship; the product costs will be distorted.

> finding a cost …base that approximates cause and effect relationships is justified if the benefits from improved decisions exceed the costs of finding and using the base…if an organization is able to accurately measure cause and effect relationships, it can precisely trace costs rather than approximately allocate them. If it cannot identify causal relationships between resource spending and use but still desired to

> allocate costs, it must use a less accurate cost allocation base. The more closely the …base reflects a link between resource spending and use, the more useful …costs are likely to be for planning, decision making, and influencing behavior. (Hilton, Maher, & Selto, 2008, p. 379).

When overhead costs are pooled, these costs are spread among the various cost objectives. The distribution of these costs is based on a rate. The basic formula for an indirect or overhead cost rate is:

$$\text{Rate} = \frac{\text{indirect cost pool expenses}}{\text{base}}$$

Activity Based Costing (ABC) uses cost drivers as bases. In ABC, the organization identifies all the activities performed by the organization in the performance of its work. Those activities are then classified as they relate to the products of that company. The costs of those activities are estimated, and then a cost driver is calculated for each activity. In the prior example, the activity of driving the company car could have mileage as a cost driver. This cost driver has a rate associated with it, and becomes a cost driver rate that the company can use for assigning costs to the various products. A cost driver rate "is the estimated cost of resource consumption per unit of the cost driver for each activity," while a cost driver "is a characteristic of an activity or event that causes that activity or event to cause costs" (Hilton, Maher, & Selto, 2008, p. 53).

Rather than track by activities, some organizations distribute service department costs to production departments. Two alternate analytical methods include the step method and the direct method. The direct method attributes the costs of support service departments to internal customers without taking into account interactions among support-service departments (Hilton, Maher, & Selto, 2008, p. 383). Using this method, the costs of service departments are distributed within the organization, often based on the percentage of service used or quantity of service required (as in square feet of floor space occupied). All support services recoup their costs through the various production departments. Yet, this direct method does not compute for service departments that utilize other service departments. Alternatively, the step method of cost allocation "recognizes that some support-service departments provide services to other support

services as well as to production departments" (Hilton, Maher, & Selto, 2008, p. 386). The step method begins with the most significant service department and distributes its cost among the other production and support departments. When that service department has distributed all costs, then the next significant service department distributes its costs among the various service and productions departments. When using the step method, the service department does not attribute costs to itself. Also, if a service department's costs have already been distributed, they are not considered when distributing subordinate service center costs. The direct method is simpler to use than the step method, but the step method could provide a more accurate distribution of costs because it recognizes some use of a service department by other service departments (Hilton, Maher, & Selto, 2008, p. 389).

A third method to distribute service department costs is available, but is not used as much as direct and step. The reciprocal method of allocation recognizes and accounts for all service department costs among other service departments, regardless of significance. This method uses the following summation:

Total Dept. Costs = (Direct cost of Dept. + Service costs to be distributed to Dept.)

This creates "one equation for each department in which the unknown element is the total department cost…this set of equations is then solved using matrix algebra" (Hilton, Maher, & Selto, 2008, p. 394). It is helpful to utilize a spreadsheet where utilization percentage, allocation costs, the inverse matrix, and derived cost allocation can be displayed and explained when using this method.

The attempt to trace indirect and overhead costs is not an absolutely precise process and is subject to political and economic concerns in the organization. Consideration must be given to how much cost the chosen process uses and compare that to the benefit the organization receives from that analysis. When a cost analyst designs a cost accounting system, the analyst must balance the benefits of complex design with the costs of a complex design. If the system is changed but the distribution of costs are unaffected, then the benefits of an advanced system will be overcome by the costs of maintaining that system (Hilton, Maher, & Selto, 2008, p. 392). Managers must also

include performance measurements and internal controls when developing the proper cost distribution method. Experimentation with various methods of cost distribution could yield important information to managers, but this experimentation must be balanced with the cost of doing so.

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IV. BURDENED LABOR CALCULATED

A. MILITARY PAY AND COMPENSATION ESTIMATE (FRCMA)

1. Basic Pay and Allowances

When comparing labor costs, it is necessary to utilize pay grades that are equivalent in expertise. This report utilizes the full journeyman level of expertise, which equates to a Petty Officer 2nd Class (E-5) for military, Working Grade 10 (WG-10) for government civilian, and a standard rate is applied for a contractor.[1] Since both military and civilian utilize pay levels within grade, the mid-level step or time in service is used. Time in grade for military E-5 will be "greater than six years," and pay level "(step) 3" (Appendices A and D) will be used for WG-10.

Using 2012 military pay tables (Appendix A), the basic pay of an E-5 over six years of service is $2,662.20 per month. Other pay includes housing allowance ($1,467.00 with dependents) and basic allowance for subsistence ($348.44). Total pay equals $4,513.64 per month. To determine total available hours per month, multiply 4.33 weeks[2] times standard hours per month (40).

4.33 weeks x 40 hours/week = 173.2 hours per month

Table 1 analyzes a method to determine an hourly wage from this basic salary:

[1] Data collected from interviews at FRCMA Oceana.

[2] If 365 (days) is divided by 7 days, the result is 52.14 weeks. The resulting math implies more weeks in a year than 52. When able, this report will utilize 4.33 weeks in month to compensate. This is a result of 52 weeks per year divided by 12 months per year. Result is 4.33 weeks per month (rounded).

Table 1. Basic Military Hourly Rate (From Appendix A)

4.33 weeks	x 40 hours/week	= 173.2 hours
$4,513.64	÷ 173.2 hours	= $26.06 per hour (rounded)
Medicare / Social Security		= $0.9968 [3]
Total Hourly Rate		= $27.06 (rounded)

2. Military (FRCMA) Burdened Labor Rate

Since it is often difficult to accumulate all costs associated with labor, some businesses use a labor rate to predict total cost of the employee.

> A major problem in many organizations is that actual costs, even at the total project level are not obtainable in a timely manner or properly segregated by project. In that case, it is necessary to set up a "feed forward" cost reporting system instead of a "feedback" cost system (which usually comes off the company's general ledger). In this case resource utilization is tracked as well as percent complete, and the predicted cost is the resources utilized times the estimated resource rate. For labor, the hours worked is tracked each reporting period as well as the percent complete for each work packet. The hours worked are then multiplied by a "burdened" labor rate either as an overall man rate for the project or a rate for each skill level. (Brandon, 1998, p. 19)

The total cost of an employee is difficult to predict. Organizations can use historical data to estimate the full cost or can estimate a burdened labor rate. A useful exercise is to accumulate data on expenses and translate those expenses to cost per hour for an employee. Using an E-5 military member (using cost data from Section IV-A above), costs can be estimated and translated into cost per hour. The cost per hour must not just include their basic pay rate, but must also include those hours that are non-productive or non-billable. Some employees are paid even when their work or time is not producing income for the organization. This non-income producing time must be

[3] 7.65% total rate; government portion 3.825%.

accounted for. If the cost of that time is not known, then the organization will not know to charge for that time in the rates to customers. Examples of non-income producing time would be vacations, office meetings, mandatory education time, and sick leave.

In calculating costs, the organization should collect the expenses specific to each employee. A basic wage model is built on this information, and can be utilized to track or improve the model in the future. Using data collected from interviews at FRCMA Oceana and Norfolk, and information from the Office of Management and Budget, the model below was constructed to calculate a burdened rate for a military employee which captures non-billable and other annual costs.

The model is organized into three sections: unbillable hours, other annual expenses, and calculation of burden rate. The first section captures the un-billable or non-productive hours in which the employee is paid. The number of office meetings per year is calculated using an interviewee data rate of 1.5 hours per week spent by military personnel in mandatory meetings. To determine hours per year, the number of weeks in the year was multiplied by the number of hours per week. The number of weeks was determined by subtracting the total holiday/vacation days from 365 days per year and dividing by seven.[4] Since this rate of 1.5 hours per week is an estimate, different estimates can cause the model to change. The hours spent in mandatory education was also an interviewee estimate, and is set at a rate of one hour per week in organizational and U.S. Navy related educational periods.[5] Estimated hourly physical training and other military related activity of one hour per week was based on interviewee estimates, and this rate can also vary among organizations.[6] Collecting actual data for each organization can produce a more refined model, but benefits of tracking this data must be balanced with the costs of doing so. From this accumulated data, non-billable (lost time) total hours and cost can be determined. These non-billable hours are important because they represent resource utilization. The non-billable hours must be subtracted from the total

4 1.5 hours per week x46.43 weeks; 46.43 weeks determined by 365 days – 40 days (total leave and holiday) = 325, 325/7=46.43.

5 Hours of education estimated at 1 hour per week x 46.43 weeks = 46 (rounded).

6 Estimated other paid hours include physical training and other military related activities outside of production work; 1 hour per week x 46.43 weeks (rounded).

hours paid in a year. By subtracting the non-billable hours from the total hours paid in a year, the organization can determine a cost per hour to charge the customer to cover all the expenses related to the employee.

The second section of Table 3 captures other annual expenses which relate to the employee. The two primary annual expenses used in this model are medical/insurance and retirement expenses. There could be additional annual expenses for each employee that could change the model (e.g., cost of living adjustments, bonuses, special pay). This project includes medical and retirement as the most significant. From the Office of Management and Budget (OMB), the total accrual of TRICARE medical payments is $4,459,000,000. Dividing by the total number of Navy personnel (325,700), each member represents a $13,690 expense to the government.[7] OMB data also provides the budgeted accrual of $4,204,000,000 in retirement benefits, which equates to $12,907.58 per employee.[8] This is an average cost per employee, and does not represent a pay grade specific retirement accrual.

The third section of the model represents a burdened rate for the employee. The non-billable and other annual expenses are totaled and divided by the total available billable hours. This cost per hour represents non-billable and annual expenses which, when added to the basic hourly rate, represents a burdened rate for the employee. Table 2 summarizes the data, and provides a model for estimating the burdened rate for a military employee.

[7] Estimated from Office of Management and Budget Data. Use Tricare total and divide by number of military personnel. Using 2012 OMB data, Total Tricare Accrual is $4,459,000,000 / 325,700 Navy Personnel = $13,690. Source location: www.whitehouse.gov/sites/default/files/omb/budget/fy2013/assets/mil.pdf. "Department of Defense – Military Programs."

[8] Data taken from same OMB Budget Data. Total Accrued Retirement Benefits $4,204,000,000 divided by 325,700 personnel. www.whitehouse.gov/sites/default/files/omb/budget/fy2013/assets/mil.pdf.

Table 2. Military Burdened Labor Rate (From [8–9])

Non-billable Paid Hours:	Days:	Hrs	Cost/Year
Paid Holidays	10	80	$2,164.80
Paid Vacation	30	240	$6,494.40
Office Meeting (Hours/year)		70	$1,894.20
Hours to Attend Education		46	$1,244.76
Other Paid Hours		46	$1,244.76
Total Non-Billable Paid Hours / Expense		482	$13,042.92
Hours Paid in a Year (52 weeks x 40 hrs/week)		2080	
		- 482	(unbillable)
		1598	(billable)

Other Annual Expenses

Medical Benefits / Insurance			$13,690.00
Retirement Accrual			$12,907.58
Total Other Annual Expenses			$26,597.58

Total Burdened Rate for E-5 (greater than 6 years)

Total Non-Billable Expense			$13,042.92
Total Other Annual Expenses			$26,597.58
Subtotal			$39,640.50
Billable Hour Rate (divide by 1598)			$24.81

Total Burdened Rate ($27.06 Basic Pay + $24.81)	$**51.87** (rounded)
Burden Rate Percentage ($51.87/$27.06)	1.91 or 191%

B. CIVILIAN PAY AND COMPENSATION ESTIMATE (FRCMA)

1. Basic Pay and Allowances

FRC utilizes a Working Grade (WG) civilian labor scale. Using the WG pay scale (Appendix B) the base pay of a WG-10 (step 3) is $22.78 per hour. FRC Mid-Atlantic (FRCMA) Oceana and Norfolk fall under a different pay scale for select WG billets (see Appendix D). At the WG-10 level, the majority of the billets would fall under this special pay scale; therefore, this rate is used for analysis in this report. The special pay rate for a WG-10 (step 3) at FRCMA is $30.74 per hour ($7.96 per hour above standard rate for the Norfolk-Portsmouth-Newport News-Hampton, Virginia area as shown in Appendix B). Based on information from FRCMA, the expertise of an E-5 is approximately equal to a WG-10. Based on information provided by FRCMA staff, the majority of the contractors fill positions that could be filled by individuals who are at the pay level of E-5 or WG-10. Table 3 presents civilian hourly rates adjusted for locality (from Appendix D). The overtime rate is a standard 150 percent increase from base hourly rate. The holiday rate is a 200 percent increase based on information from the civilian collective bargaining agreement.[9]

Table 3. Civilian Base Hourly Rate (From Appendix D)

Base Hourly Rate	$30.74
Overtime Hourly Rate (1.5 or 150%)	$46.11
Overtime Holiday Rate	$61.48

FRCMA utilizes a budgeted civilian rate of $44.14 per civilian hour. This rate includes labor and non-labor expenses, and includes contractor hours. The rate drops to $38.46 when non-labor expenses and contractor hours are removed. Since the military base salary model does not include non-labor in the base hourly rate (e.g., bonuses,

[9] From "Collective Bargaining Agreement Between the Naval Air Depot Jacksonville Detachment Oceana and the International Association of Machinists and Aerospace Workers Local 97" dated 16 April 2004; Article 10, Section 5.

special pay, incentive pay), removing non-labor from the civilian rate makes it comparable to the military rate. Still, this hourly rate is a $7.72 or 25 percent difference from the rate in Table 4. It was determined from analysis of FRCMA financial information that the $38.46 rate included budgeted overtime (which is $46.11 per hour), This would subsequently increase the average hourly rate. The $38.46 is an average cost using historical base salary and overtime rates for various WG employees. In contrast, the base rate of $30.74 recognizes no overtime or non-labor expenses. The military base rate included no overtime or non-labor; therefore, to maintain consistency in analysis, this report's labor model utilizes the base rate, as detailed in Appendix D and the above table. It is important to understand, though, that civilian rates do increase with overtime, and this overtime expense increases the actual per hour rate expense of civilian employees. Such overtime expenses should be controlled, as they do not represent a true base hourly rate. Controlling overtime for civilians will drive the budgeted rate towards the base hourly rate as detailed in Appendix 4.

2. Civilian (FRCMA) Burdened Labor Rate

Using a similar labor model provided in Section IV-A (Military Burdened Rate), the below table details expenses associated with a civilian employee. Differences between the two models include vacation/sick leave and workers' compensation categories. The interviewee data suggested civilians attend office meetings, education periods, and other paid hours in non-productive work at half the military rate. Further research into these categories could refine the model, as they would present a more accurate number of non-billable hours. Actually tracking these hours could potentially change the model's calculated rates. Again, benefits of tracking this data would need to be balanced against the costs of doing so. The retirement, life/health insurance, and workers' compensation calculations utilized Office of Management and Budget Circular A-76 percentages to determine rates. As stated in the military section, this rate would not apply to all civilian employees due to varying wage grades. For consistency, the WG-10 base rate is utilized for these calculations. Table 4 summarizes this data and presents a burdened rate for civilian employees.

Table 4. Civilian Burdened Labor Rate (From [11–14])

Non-billable Paid Hours:	Days	Hrs	Cost/Year
Paid Holidays	10	80	$2,459.20
Paid Vacation	21	168	$5,164.32 [10]
Paid Sick Leave	13	104	$3,196.96 [11]
Office Meeting (Hours/year)		35	$1,075.90 [12]
Hours to Attend Education		23	$707.02
Other Paid Hours		23	$707.02
Total Non-billable Paid Hours / Expense		433	$13,310.42
Hours Paid in a Year (52 weeks x 40 hours per week)		2080	
		-433	Un-billable
		1647	Billable

Other Annual Expenses

Retirement, Life/Health Insurance (32% of 2080× $30.74)			$20,460.54 [13]
Workers' Compensation (2% of 2080 × $30.74)			$1,278.78
Total Other Annual Expenses			$21,739.32

Total Burdened Rate for WG-10 (step 3)

Total Non-Billable Hour Expense			$13,310.42
Total Other Annual Expenses			$21,739.32
Subtotal			$35,049.74
Billable Hour Rate (divide by 1647)			$21.28

Total Burdened Rate ($30.74 + $21.28)	$**52.02**
Burden Rate Percentage ($52.02 ÷ $30.74)	1.69 or 169%

10 Computed using 6.5 hours per paid period (26 periods) = 21 days.

11 Computed using 4 hours per paid period (26 periods) = 13 days.

12 Using interview information from FRCMA Norfolk, on average, civilian non-production unbillable hours are approximately half that of their military counterparts.

13 Rate from OMB Circular A-76, "A-76 Studies."

A burdened rate of 1.69 is higher than the FRCSE/FRCMA acceleration rate of 53.75 percent or 1.5375. This signals that the rates used above are different than internal calculations within the Working Capital Fund system. A 2000 report written by Professor Daniel Nussbaum stated that the costs of civilian labor were between 150–250 percent of base salaries. His estimated burden rate is approximately 1.94 percent. His estimated civilian labor costs were approximately 262 percent using market and professional rates.[14] The model in Table 5 accumulates basic expenses that do not include other expenses such as overhead and depreciation that would subsequently drive the burden rate higher than 1.69. Given the model in Table 5 and the 2000 report, the burdened rate of 1.5375 used by FRCMA is not based on the basic wage rate of $30.74 (as this model is).

C. CONTRACTOR PAY AND COMPENSATION (FRCMA)

FRCMA utilizes a standard rate of $40.00 per hour for contractor labor. There is no difference between standard, overtime, or holiday rate. Contract labor expertise is generally at the full journeyman level, and that expertise equates to a WG-10 (E-5) per FRCMA estimation. This flat rate per hour wage rate is all inclusive and contains all of the costs discussed in this report: base pay and allowances, burdened rate, and indirect costs incurred by the contract company. The rate also includes one other type of cost not previously mentioned, the profit to the contractor's organization. This rate can be utilized for analysis as long as the contract for this price is valid.

[14] From Dr. Daniel Nussbaum in an unpublished 2000 report titled, *Economics of Consulting Firm Support Vs. In-House Government Support.* Dr. Nussbaum is professor at the Department of Operations Reserach at the Naval Postgraduate School in Monterey, California (Nussbaum, 2000).

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V. INDIRECT AND DIRECT COST COMPARISON

A. METHODS OF DISTRIBUTING COSTS AT FRC

Cost pooling has been established by FRC Southeast (FRCSE), and has been formalized in FRC Southeast Instruction 7310.1. The production process within FRCMA incurs expenses as the employees work on aircraft and aircraft systems. These expenses are incurred through job order numbers (JONS) assigned to the aviation projects. When any charges or expense cannot be attributed to a direct project, it is determined to be an indirect cost. These costs are accumulated in overhead expense accounts, and those costs are given a cost class code. Currently, there are approximately 167 cost class codes. Defined by FRCSE instruction, there are two main types of indirect costs: production expense and general expense. The two types of cost centers used to collect these indirect costs are production and General and Administrative (G&A) (FRC Southeast, 2011).

As the cost centers incur indirect costs, these costs are accumulated and coded. The three cost centers at FRCMA are Cost Centers 53, 54, and 55. Various shops within those cost centers generate indirect costs in production and servicing. Those indirect costs are coded and show up in one of the three cost centers. The majority of facility costs fall under Cost Center 54, while the majority of the administrative staff costs fall under Cost Center 55. This form of pooling costs is direct in nature. Job orders incur indirect costs to the three cost centers. These costs are directly applied to the cost center.

The driver used by FRCMA in formulating overhead rates is accumulated direct labor hours. FRCMA Oceana combines civilian and contractor hours to formulate an indirect rate, and FRCMA also incurs other indirect costs from outside of the organization. FRCSE (Jacksonville, FL) transfers general and administrative (G&A) costs to FRCMA. This transfer from FRCSE increases the indirect rate for FRCMA. FRCMA charges customers a rate of $31.63 of overhead per civilian labor hour; though, this is not a base civilian rate. This rate includes the transfer fee, non-labor and material charges, and contractor hours (which spread the overhead costs over more hours). When analyzed without these charges and hours, a different rate is generated. Since this report

attempts to separate costs and distribute them appropriately to each category of employee, the overhead analysis in Section V-B-2 (Administrative Overhead) will use the rate of $24.15 since this rate removes contractors and transfer fees. The below charges used by FRCMA demonstrate the various overhead rates and the transfer of costs:[15]

- Indirect civilian overhead rate, labor only, **with contractor hours** included.…….$19.08
- Indirect civilian overhead rate, labor only**, without contractor hours**……..$24.15
- Indirect overhead rate, without contractor hours, **with FRCSE transfer charge**……..…..$26.14
- Indirect overhead rate, **charged to customer** with labor, material, contractor hours, travel, and other costs…….....……...$31.63

The labor rate, when analyzed separately, shows $1.99 in transfer costs. This represents an 8.24 percent increase in the indirect rate. As stated above, contractor hours, when included, increase the number of direct labor hours (DLH). This increase in the number of total DLH's decreases the civilian overhead rate per DLH by $5.07. This represents a 21 percent decrease in overhead rate per hour.

When transfer costs, contractor hours, and non-labor costs are included, this rate increases to $31.63. This represents the cost of total overhead charged to the customer. When compared to the indirect overhead rate for civilians only as shown above, this is a $7.48 increase (31 percent). When compared to the rate based on total civilian and contractor hours (before transfer), this is a $12.55 increase (66 percent).

[15] Data collected from FRCMA using cost divided by direct labor hours. Total labor cost (civilian) is $5,996,250. Direct labor hours 248,300 (includes regular hours and overtime). Contractor hours 65,900.

B. COMPARISON OF OTHER COSTS

1. Overtime

Military labor rates change when overtime is encountered. Yet, unlike typical overtime rates, military labor rates decrease vice increase. Since the standard pay rate does not change in military overtime, the labor rate decreases due to the increase in available hours. Table 5 presents changes to military overtime rates (non-burdened). The first section of the table begins with the standard monthly pay rate divided by the hours available in a 40-hour work week. Two overtime scenarios are shown in the second section. The first example is a situation where a military employee works 10 hours more per week in a given month. Such a situation would occur if the employee worked two extra hours in overtime per day, Monday through Friday. This could also occur if a military employee worked an extra ten hours on a weekend day. The second example illustrates the rate given 10 hours of overtime accrued over the entire month.

Table 5. Scenarios of Military Overtime Analysis (From [17])

Military base pay (E-5 with BAH > 6)	$4,513.64
Standard hours available (4.33 weeks x 40 hours per week)	173.2
Total Hourly Rate	$27.06

10 Hrs per week: hours available (4.33 weeks x 50 hrs/week)	216.5 [16]
(10 hours per week) Total Hourly Rate ($4,513.64 / 216.5)	$20.84
10 Hours Overtime Accrued in Month (173.2 + 10)	$24.64

This example illustrates a potential economy of the salaried position when extra hours are needed to complete work. The salary is spread out over more hours, therefore the cost per hour decreases. The increase in available hours will also increase the number of hours billable when computing fully burdened costs (see Section IV). The utilization of salaried positions for overtime is an important management decision, as there are other human relations costs associated with burdening overtime with no increase in salaried

16 Ten hours of overtime per week during the month. This could equate to 10 hour (Monday through Friday) workday, or it could equate to a Saturday work day in addition to a standard work week.

compensation. Conversely, salaried positions become less efficient when underutilized. The cost per hour for military increases as the number of hours available (utilized) decreases.

Contractor rates do not change with overtime at FRCMA. The standard rate of $40.00 per hour is utilized regardless of time utilized. Civilian rates increase when overtime is encountered. Civilian rate for overtime increases from $30.74 to $46.11 (a 150 percent increase), and increases to $61.48 (200 percent increase) per hour for working on a holiday.

2. Overhead

The computed burdened costs of each type of employee in Section IV do not include overhead. The number and types of employees vary among the FRCMA organizations. To illustrate, FRCMA Oceana (Level 3) has no military employees, while FRCMA Norfolk has 762. Similarly, while all employees at Oceana are either civilian or contractor, there are only 12 civilians at the Norfolk location. As the following overhead analysis shows, each type of employee incurs a different overhead rate. Thus, each FRCMA unit will have a different overhead rate based on the employee makeup of the unit. For this analysis, FRCMA Norfolk will be utilized to estimate overhead rates for military since it is primarily staffed by military employees. Additionally, headquarter costs, information technology support, and other G&A overhead expenses exist in the Navy that could be distributed to FRCMA Norfolk. These expenses could change the labor rate model in this report, but are beyond the scope of this project.

The Administrative, Quality Assurance, and Supply departments provide indirect support to the production departments. These indirect services support many products, and cannot be traced to one specific product.

> Establishing separate indirect cost pools improves visibility of difficult to control costs and facilitates the monitoring of similar types of expenses…Indirect cost pools are categorized as overhead, service center, or general and administrative (G&A) expense pools. The primary distinction between overhead and G&A cost pools is that overhead costs

> only benefit a part of the business segment…while G&A expense pool benefits the entire organization. (Defense Systems Management College, 1999, pp. 3–1)

This analysis estimates a cost of overhead using the monthly pay (cost to government) of personnel within each support department. There are 29 total employees in Administration, 24 employees in Supply, and 22 employees in Quality Assurance. Using FRCMA Norfolk information on average pay grade, Table 6 estimates overhead costs. This cost is then used in Table 7 and 8 to further burden military and civilian labor rates.

Table 6. Military Component Service Departments-Norfolk (From [18–19])

Department	Total Employees	Cost Emp./Year	Total Costs/Yr
Quality Assurance[17]	22	$98,829.02 [18]	$2,174,238.44
Supply	24	$93,804.18	$2,251,300.32
Administration	29	$93,804.18	$2,720,321.22
			$7,145,859.98

17 Number and Average within Supply and Administration is E-5 pay grade described by FRCMA Norfolk and Appendix 1. Quality Assurance average pay grade is E-6 as described by FRCMA Norfolk.

18 This represents a burdened labor rate as derived in Section IV. $4,513.64 per month x 12 months=$54,163.68; add un-billable and other annual expenses of $39,640.50; for E-6 in Quality Assurance, this burdened rate is approximately $40,608.14 due to higher base salary of $2,886.30 and BAH of $1,617.00 ($29.08 per hour).

Table 7. Military Overhead Analysis (From [20–23])

Yearly Overhead Charge	$7,145,859.98
Overhead Charge per Employee ($7,145,859.98 ÷ 687[19])	$**10,401.54**

Overhead Analysis: Military Other Expenses[20]

Medical Benefits / Insurance	$13,690.00 [21]
Retirement Accrual	$12,907.58 [22]
Military Overhead	**$10,401.54**
Total Other Annual Expenses	$36,999.12

Overhead Analysis: Military Burdened Rate

Total Non-Billable Expense	$13,042.92
Total Other Annual Expenses	$36,999.12
Subtotal	$50,042.04
Billable Hours (divide by 1598)	$31.32

Total Burdened Rate ($27.06+ $31.32)	$**58.38** (rounded)
Burden Rate Percentage ($58.38 ÷ $27.06)	2.16 or 216%

As stated in Section V-A, there are four civilian overhead rates. These rates represent different added overhead expenses and base hours. In general, overhead can include manufacturing costs, engineering costs, product costs, material costs, and service center costs. Properly pooling these costs and properly distributing these costs provides for a more accurate labor rate. This report does not include all these costs due to scope, but the costs are relevant. If the above overhead were distributed to the types of employees, this will affect the labor model results of this report. For a beginning analysis of civilian overhead, this report utilizes the $24.15 overhead rate. Such costs were not analyzed in the military overhead section and, therefore, are not included here. This

19 Allocation of service using direct method: 762 (total employees) – 75 (total support personnel) = 687.

20 From Military Pay section of this report.

21 Estimated from Office of Management and Budget Data. Using Military Total Pay w/ Tricare Accrual amount, subtract Military Pay and result is Tricare accrual per year. Use Tricare total and divide by number of military personnel. Using 2012 OMB data, Total Tricare Accrual is $4,459,000,000 / 325,700 Navy Personnel = $13,690. Source location: www.whitehouse.gov/sites/default/files/omb/budget/fy2013/assets/mil.pdf. "Department of Defense – Military Programs."

22 Data taken from same OMB Budget Data. Total Accrued Retirement Benefits $4,204,000,000 divided by 325,700 personnel.

report accepts this as a base civilian rate, since it does not include any transfer costs from FRCSE nor does it include contractor hours. The other rates in Section V-A include contractor hours, material, transfer, contractual, and other costs. Future analysis can refine rates to ensure only civilian incurred overhead are included in the model.

Table 8. Civilian Overhead Analysis (From [24–25])

Overhead Analysis: Civilian Other Annual Expenses [23]

Retirement, Life/Health Insurance (32% of 2080 × $30.74)	$20,460.54 [24]
Workers' Compensation (2% of 2080 × $30.74)	$1,278.78
Total Other Annual Expenses	$21,739.32

Overhead Analysis: Civilian Burdened Rate

Total Non-Billable Expenses	$13,310.42
Total Other Annual Expenses	$21,739.32
Subtotal	$35,049.74
Billable Hour Rate (divide by 1647)	$21.28
Overhead Rate Charge	**$24.15**
Total	$45.43

Total Burdened Rate ($30.74 + $45.43)	$**76.17** (rounded)
Burden Rate Percentage ($76.17 ÷ $30.74)	2.48 or 248%

There is another charge that is WCF specific. The Commanding Officer and Production Officer are military billets that are supported by the WCF. "While the positions in the Working Capital Funds can be manned by civilian personnel, the military departments assign military personnel to the working capital fund activities to maintain revolving fund expertise in the military ranks" (American Society of Military Comptrollers, 2011, p. 2.1.67). These two billets reside at FRCMA Oceana, but support

23 From Civilian Pay section of this report.

24 Rate from OMB Circular A-76, "A-76 Studies."

the activities at FRCMA Norfolk. This support is general and administrative in nature, and therefore could be added to the overhead charge for civilian employees. Using the equivalency rates in Appendix C, an additional charge for a GS-14 and GS-15 [25] could be included. Though, the rates for civilian employees vary according to location. The differences between standard and locality rates vary almost $20,000 between the two pay grades. These positions support FRCMA but are necessary across the FRC/WCF construct. Two additional aspects of research required to refine this report's model are determining the actual reimbursed amount, and how the G&A costs of the military positions are distributed.

Overhead charges for contractors are a challenge. Contract employees incur overhead within their own company, but the ability to control that overhead by the government is limited. Regardless, the negotiated flat rate for contracted work represents the direct and indirect costs of the contractor. Based on interviewee data from FRCMA Norfolk, the Norfolk Administrative department support for contractors is limited. Even so, at FRCMA Norfolk, the Quality Assurance and Supply departments do provide services in production which would include contractor production; therefore, the costs of those departments are distributed to contractor overhead. The contract support billet is a collateral duty at FRCMA Norfolk, however, there are likely to be overhead expenses in contract support elsewhere. Contract support and administration varies among contracts, but the expenses incurred through this administration could be significant. This report does not include costs or expenses from this administration, yet it is recommended that such research is conducted to refine the labor model. The model used for civilians and military employees utilized billable and non-billable hours. Unlike the military and civilian analysis above, this research was unable to separate contractor hours into billable and non-billable hours due to the flat rate feature of the contract. Therefore, the model for contractors uses direct labor hours to compute overhead rates when comparing

[25] O-6 equivalent to GS-15 and O-5 equivalent to GS-14. Using OMB data, GS-15 step 5 Virginia locality is $131,509, while the standard rate is $103,707. GS-14 step 5 Virginia locality is $111,798, while the standard rate is $88,165.

contractors with other employees. Using contractor direct labor hour information from FRCMA Norfolk as a driver, the Table 9 distributes Quality Assurance and Supply department non-production labor costs to burden contract per hour labor.

Table 9. Contractor Overhead Analysis (From [27])

Total Direct Labor Hours	314,200 [26]
Total Direct Labor Hours without Contractors	248,300
Contractor Direct Labor Hours (314,200 - 248,300)	65,900

Quality Assurance Overhead Yearly Total	$2,174,238.44
Supply Overhead Yearly Total	$2,251,30032
Annual Overhead Total without Administration	$4,425,538.76

Contractor portion of overhead (65,900 ÷ 314,200hrs)	20.974%
Contractor overhead (20.974% × $4,425,538.76)	$928,212.50
Contractor per hour overhead charge ($928,212.50 ÷ 65,900)	$14.09 (rounded)
Contractor per hour rate	$40.00
Contractor per hour rate with overhead rate applied	$**54.09**

3. Depreciation

Employees within an organization enjoy the necessary objects to conduct their work. These necessary objects include the tools to complete production (products) and the building/land to conduct the work. The buildings and tools utilized by FRCMA are property, plant and equipment (PP&E). FRCMA utilizes PP&E to collect revenue from customers in aircraft maintenance. Since FRCMA uses these assets to "earn revenue, the matching principle requires that the company match the expense of the assets' use against the revenue" (Nikolai, Bazley, & Jones, 2010). When determining how much to charge customers, FRCMA must account for the expenses of PP&E in the form of a depreciation

26 Direct labor hour data received from FRCMA Oceana.

expense. The expense of utilizing the building spaces and equipment to generate revenue must be appreciated, and helps in the analysis of labor costs (i.e., the proper price to charge customers to recoup PP&E expenses).

To determine depreciation, FRCMA should consider the asset(s) costs, service life, and residual value at the end of its service life. For the purpose of this report, the depreciable assets analyzed are the facilities that support FRCMA Norfolk. When pooled, these facilities represent an asset value to be depreciated. The asset value used in this report came from Appendix E. No equipment inventory was taken and valued at FRCMA Norfolk. A complete PP&E valuation for depreciation calculations is recommended to refine this report's labor model. Using information from FRCMA Oceana, the building's original cost would be depreciated over its useful life of 67 years.[27] The residual value of FRCMA Norfolk would be the "expected value of the asset at the end of its service life minus the costs of disposal, such as dismantling, removing, and selling the asset" (Nikolai, Bazley, & Jones, 2010). It is reasonable to assume the Department of the Navy does not plan to sell the building, and that the building will be utilized until it has been exhausted physically and is functionally obsolete. "In practice, because residual value is difficult to estimate, it often is ignored in computing the depreciation amount" and is ignored in this report (Nikolai, Bazley, & Jones, 2010).

The facilities utilized at FRCMA Norfolk are listed in Appendix E and total $13,274,800.[28] Using straight line depreciation, the annual depreciation would be $198,131 .[29] Table 10 illustrates:

[27] Per information obtained from FRCMA; building estimated useful life, not including nor assuming capital improvement programs which extend its useful life.

[28] Summed total from facilities listed in Appendix 5.

[29] $13,274,800 divided by useful life of 67 years, rounded, assuming no residual value (Nikolai, Bazley, & Jones, 2010).

Table 10. Straight Line Depreciation (From [28–30])

Year	Amount	Fraction	Year Dep.	Value
2006	$13,274,800	$Amt. ÷ 67 yrs.	$198,131	$13,076,668
2007	$13,274,800	$Amt. ÷ 67 yrs.	$198,131	$12,878,537
2008	$13,274,800	$Amt. ÷ 67 yrs.	$198,131	$12,680,405
2009	$13,274,800	$Amt. ÷ 67 yrs.	$198,131	$12,482,274

Accelerated methods of depreciation are also possible, but since the benefits of the asset (facilities) are not expected to decrease in each year of use, this report uses the straight line depreciation method. If FRCMA Norfolk believes that the facilities' benefits decline with their use rather than time, an activity method of depreciation could be used. However, this report does not assume that straight line depreciation of equipment is reasonable. Equipment and tools are affected by their use, and therefore it would be reasonable to utilize an activity method of depreciation. A full inventory and valuation of all PP&E could facilitate a more refined depreciation expense to be used in the labor model. "A company should use an activity method when the service life of the asset is affected primarily by the amount the asset is used and not by the passage of time" (Nikolai, Bazley, & Jones, 2010). The cost, residual value, and total activity level would be used in calculating the depreciation rate. The total hours estimated to be worked per year multiplied times the service life would yield the total activity level.

$$\text{Depreciation Rate} = \frac{\text{Cost} - \text{Residual Value}}{\text{Total Lifetime Activity Level}}$$ [30]

Table 11 utilizes the straight line depreciation method for depreciation expenses only relating to the facilities in Appendix E. An expense of $198,131 is distributed to military and civilian employees. The number of personnel used for distribution is 687. This represents the total number of employees at FRCMA Norfolk minus the service department personnel.[31]

30 From "Intermediate Accounting" by Nikolai, Bazley, and Jones (2010): Mason, Ohio, South-Western Cengage Learning (p. 519).

31 Total military employees (750) minus service and administrative personnel (75) and then adding civilian personnel (12).

Table 11. Military and Civilian Depreciation Analysis (From [33–37])

Annual Depreciation	$198,131
Depreciation per employee ($198,131 ÷ 687)	$288.40

Depreciation Analysis: Military Other Annual Expenses [32]

Medical Benefits / Insurance	$13,690.00 [33]
Retirement Accrual	$12,907.58 [34]
Depreciation	$**288.40**
Total Other Annual Expenses	$26,885.98

Depreciation Analysis: Military Total Burdened Rate

Total Non-Billable Expense	$13,042.92
Total Other Annual Expenses	$26,885.98
Subtotal	$39,928.90
Billable Hours Rate (divide by 1598)	$24.99

Total Military Burdened Rate ($27.06 + $24.99)	$**52.04**
Burden Rate Percentage ($52.05 ÷ $27.06)	1.92 or 192%

Depreciation Analysis: Civilian Other Annual Expenses [35]

Retirement, Life/Health Insurance (32% of 2080 × $30.74)	$20,460.54 [36]
Workers' Compensation (2% of 2080 × $30.74)	$1,278.78
Depreciation	$**288.40**
Total Other Annual Expenses	$22,027.72

Depreciation Analysis: Total Civilian Burdened Rate

[32] From Military Pay section of this report.

[33] Estimated from Office of Management and Budget Data. Using Military Total Pay w/ Tricare Accrual amount, subtract Military Pay and result is Tricare accrual per year. Use Tricare total and divide by number of military personnel. Using 2012 OMB data, Total Tricare Accrual is $4,459,000,000 ÷ 325,700 Navy Personnel = $13,690. Source location: www.whitehouse.gov/sites/default/files/omb/budget/fy2013/assets/mil.pdf. "Department of Defense – Military Programs."

[34] Data taken from same OMB Budget Data. Total Accrued Retirement Benefits $4,204,000,000 divided by 325,700 personnel.

[35] From Civilian Pay section of this report.

[36] Rate from OMB Circular A-76, "A-76 Studies."

Total Non-Billable Expense	$13,310.42
Total Other Annual Expenses	$22,027.72
Subtotal	$35,338.14
Billable Hour Rate (divide by 1647)	$21.46

Total Civilian Burdened Rate ($30.74 + $21.46)	$**52.20**
Burden Rate Percentage ($52.20 ÷ $30.74)	1.70 or 170%

As with overhead, contractors present a unique challenge to this report when analyzing depreciation. The overhead computed in Section V used a different method in the contractor labor rate. Similar to overhead, the contractors utilize the facilities at FRCMA Norfolk in production. Therefore, depreciation can be applied to the labor rate for contractors. To analyze contractor depreciation, the direct labor hour allocation method can be used. Unlike military and civilian, this report was unable to separate contractor hours into billable and non-billable as described above due to the flat rate feature of contractor hours. Therefore, the use of direct labor hours for the model is used to compare depreciation rates when comparing contractors with other employees. Using contractor direct labor hours as a driver, Table 12 burdens contractor labor with depreciation.

Table 12. Contractor Depreciation Analysis (From [38])

Total Direct Labor Hours	314,200 [37]
Total Direct Labor Hours without Contractors	248,300
Contractor Direct Labor Hours (314,200 - 248,300)	65,900
Contractor portion of depreciation (65,900 ÷ 314,200hrs)	20.974%
Contractor depreciation (20.974% × $198,131)	$41,555.99
Contractor per hour depreciation charge ($41,555.99 ÷ 65,900)	$0.63
Contractor per hour rate	$40.00
Contractor per hour rate with depreciation	$**40.63**

[37] Direct labor hour data received from FRCMA Oceana.

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VI. METHODOLOGY

A. LIMITS OF RESEARCH

Most financial and managerial accounting occurs at the Oceana and FRCSE locations. Data was aggregated primarily from Oceana with some indirect data obtained from FRCSE. A site visit was conducted at FRCMA Oceana, but no site visit was done at FRCSE Jacksonville. Data was collected from the primary financial and accounting staff at Oceana. No direct access to financial and accounting systems at Oceana or Jacksonville was used nor deemed necessary for this report.

B. MODEL PARAMETERS

For this study, the cost objective is the employee rather than a product. Direct labor is included using the basic salary of each category of employee. Other direct costs include some allowances and subsidies. The major components of direct costs analyzed are salary and allowances for each type of employee, and these direct costs are identified and categorized as such in Section IV. Allowances used in military computations are Basic Allowance for Housing (BAH) and Basic Allowance for Subsistence (BAS). This report does not identify special, incentive, or bonus pay for military employees due to the scope of this report. However, such pay could be substantial depending on the makeup of the organization. The use of BAH for military employees necessitates a similar civilian comparison; therefore, this report utilizes locality adjusted civilian wage rates (Appendix D). The inclusion of civilian bonuses and incentive pay was not included due to scope, but could be substantial depending on the makeup of the organization. Contractor allowances are not included since those allowances are not readily identifiable in the available data. Allowances and subsidies are paid by the contractor's civilian employer, and are assumed to be part of the contract price per hour labor cost of the contractor. The government, though, pays for part of the contractors' allowances and subsidies as part of the flat rate charged by the contractor. Furthermore, this report did not investigate the costs associated maintaining the contracts, office space, equipment usage, or other various costs associated specifically with contract support in the Working Capital Fund.

These costs could be substantial and could affect the breakdown of costs within the labor model. Of note, FRCMA considers all the contractor labor cost per hour (which would include indirect costs) to be direct in nature.

This report conducts an analysis of labor that includes a breakdown of billable and non-billable hours. The report includes hours for office meetings, education, and other non-billable categories. This report uses estimates for some non-billable categories that are based on descriptions of the process by interviewees. From the interview data, civilian employees are not tasked to non-production activities (e.g., mandatory physical training, Navy Knowledge online education, and other military oriented briefs and training) at the same rate compared to military employees. Using this data and for the purposes of this report, non-billable hours of the civilian employee are approximately half of the military allotted time. A specific analysis of non-billable hours could improve the labor model.

This report recognizes differences between military and civilian vacation/leave and sick day leave which could affect the labor model. Leave days and sick days are detailed in this report as non-billable yearly hours. The number of authorized days for military and civilians are used as the baseline number. Actual leave usage changes the non-billable hour calculations in this report, but the actual usage of leave by military and civilians is not analyzed in this report. Also, civilian sick leave could also be used (and subsequently accrued over the period of employment) or transferred during the year. Finally, it is recognized that when civilians take leave, only working days are counted against the leave balance (i.e., Saturday and Sunday do not count). The following table, Table 13, shows examples of how leave and sick day usage changes non-billable hour calculations. This table details the difference between when total available vacation/leave (baseline) is taken by an employee and when only half of the available vacation/leave is taken by the employee. The cost per year and non-billable totals are also shown. The difference between these two numbers can impact the labor model and could be analyzed separately from this report.

Table 13. Leave Usage Example in Non-Billable Hour Calculations (From [1–2])

Civilian Non-Billable Paid Hours ($30.74 / Hr)	Days	Hours	Cost/Yr
Paid Vacation (**total available taken**)	21	168 [38]	$5,164.32 [39]
Paid Sick Leave (total available taken)	13	104	$3,196.96
Total Non-Billable	34	272	$8,361.28
Civilian Non-Billable Paid Hours ($30.74 / Hr)			
Paid Vacation (**half taken** in year)	10.5	84	$2,582.16
Paid Sick Leave (half taken in year)	6.5	52	$1,598.48
Total Non-Billable	17	136	$4,180.64
Military Non-Billable Paid Hours ($27.06 / Hr)			
Paid Leave (**total available taken**)	30	240	$6,494.40
Paid Leave (**half** taken)	15	120	$3,247.20

In the above civilian example, the difference between using only half the available vacation days is the difference of 136 non-billable hours and $4,180.64 of lost time costs. This equates to a difference between a fully civilian burdened rate of $52.02 per hour (all vacation taken) and $47.72 per hour (half available vacation taken). The fully burdened rates will be explained further in Section IV. The Department of Defense Financial Regulation details methods for approximating annual and sick leave accrual factors. The regulation states that "A Defense Working Capital Fund activity may determine its own allocation leave accrual factors because of variances caused by average length of service, climate, turnover, and local leave usage experience" (Department of Defense, 2010, pp. A–E). Accrual methods could differ from the analysis developed in this report, and could affect the labor model presented in this report.

Contractors are afforded leave by their company, and contract hours are priced at a flat rate. The non-billable vacation and sick time hours are assumed to be calculated by the contractor's company. Therefore, the hourly rate of contractors already includes these non-billable hours (and costs). The government realizes the costs of contractor vacation and sick time usage by paying this flat rate, although the vacation costs are not

[38] 8 Hours per day x number of days.

[39] Per hour charge x number of hours.

clearly visible to the manager within FRCMA. Since analyzing the rate breakdown of contractors is outside the scope of this thesis, contractor non-billable hour comparisons will not be included. Overhead and depreciation costs for contractors used in this report rely on a direct labor hour analysis vice a non-billable hour breakdown analysis.

Administrative overhead varies among organizations, and also varies between FRCMA locations. Each site at FRCMA could experience different overheads; therefore, this report will utilize the FRCMA Norfolk location to conduct a baseline military overhead analysis. Since the FRCSE/Working Capital Fund sets a standard overhead rate for civilian employees, this analysis utilizes the given rate. This report does not validate the rate nor does it assume the rate represents the true cost per hour overhead for civilian employees. This overhead rate presents a potential separate study to validate if the overhead rate is accurate. The Fleet Readiness Center construct was intended to integrate intermediate and depot level production with the units they support. FRCMA Oceana shares hangar space with three operational squadrons, while FRCMA Norfolk has its own building. FRCMA Oceana does not pay for facility rent or utilities, while FRCMA Norfolk does. It is recognized that these factors could create different overhead rates.

All types of employees do not provide equivalent talent and ability to perform tasks. Productivity, available hours, and knowledge base are all employee aspects that have financial value. These qualities not only have value, they can potentially reduce costs. These qualities are not analyzed in this report, though it is understood that the qualitative aspects of the various employees do have a financial aspect. A separate report that focusses on talent, working relationships, human resources, and flexibility of employment would include this data and could attempt to quantify those aspects financially to improve the labor model presented in this report.

This report analyzes non-billable hours for the three types of employees. For these hours, most estimates were approximated. Subjective historical trends and some expert opinion were used to estimate both grade equivalency and non-billable hour generation. The estimates in this report offer a quick and inexpensive method for data accumulation. An engineering or bottom-up approach is a more accurate method of estimation, but it is more time consuming and expensive to conduct.

VII. CONCLUSIONS AND IMPLICATIONS

A. CONSOLIDATED DATA

Consolidating data from Section IV and V, Table 14 gives an overview of the per hour labor rate estimate. Table 14 is divided into Military, Civilian and Contractor columns. The rows represent the expense/cost value of the categories.

In Panel A, the basic hourly rate is burdened with non-billable hours. This burden rate is then compared to the basic hourly rate computed in this report. The non-billable hours affect military burden rates more than civilian and contractors.

In Panel B, overhead and depreciation expenses are summarized. The overhead and deprecation rates are separated. The expense related to each is added to the initial burden rate shown in the first section. To the right of the overhead and depreciation totals is the added expense of overhead and depreciation to the initial burden cost per hour as shown in the first section. A total burden rate is shown which includes both depreciation and overhead added to the initial burden. This cost is then compared to the basic hourly rate to demonstrate a total burden rate for this report. Civilian overhead expenses as detailed in this report generate a greater expense compared to military and contractor employees.

Panel C displays potential effects of overtime on labor rates. The first row of overtime considers a 10 hour accumulation of overtime in one month. The second row considers 10 hours of overtime every week for a month. The total burden for overtime takes the change in overtime rate and multiplies it by the total burdened rate as calculated in the second section. This represents the new total burdened cost per hour with the appropriate overtime example. Overtime for civilians changes the cost per hour when compared to military and contractor burdened labor rates in both overtime scenarios.

Table 14. Consolidated Labor Analysis (From Section IV and V)

Panel A

Cost Category	Military		Civilian		Contractor	
Basic Hourly Rate	$27.06		$30.74		$40.00	
Initial Burden	$51.87		$52.02		$40.00	
Burden Rate	192%		169%		100%	

Panel B

		Over initial		Over initial		Over initial
Overhead	$58.38	$6.51	$76.17	$24.15	$54.09	$14.09
Depreciation	$52.04	$0.17	$52.20	$0.18	$40.63	$0.63
Total Burden	$58.55		$76.35		$54.72	
Burden Rate	216%		248%		137%	

Panel C

Overtime		Total Burden		Total Burden		
Single 10 Hrs	$24.64	$53.31	$46.11	$114.53	$40.00	$54.72
10hrs/week	$20.84	$45.09	$46.11	$114.53	$40.00	$54.72

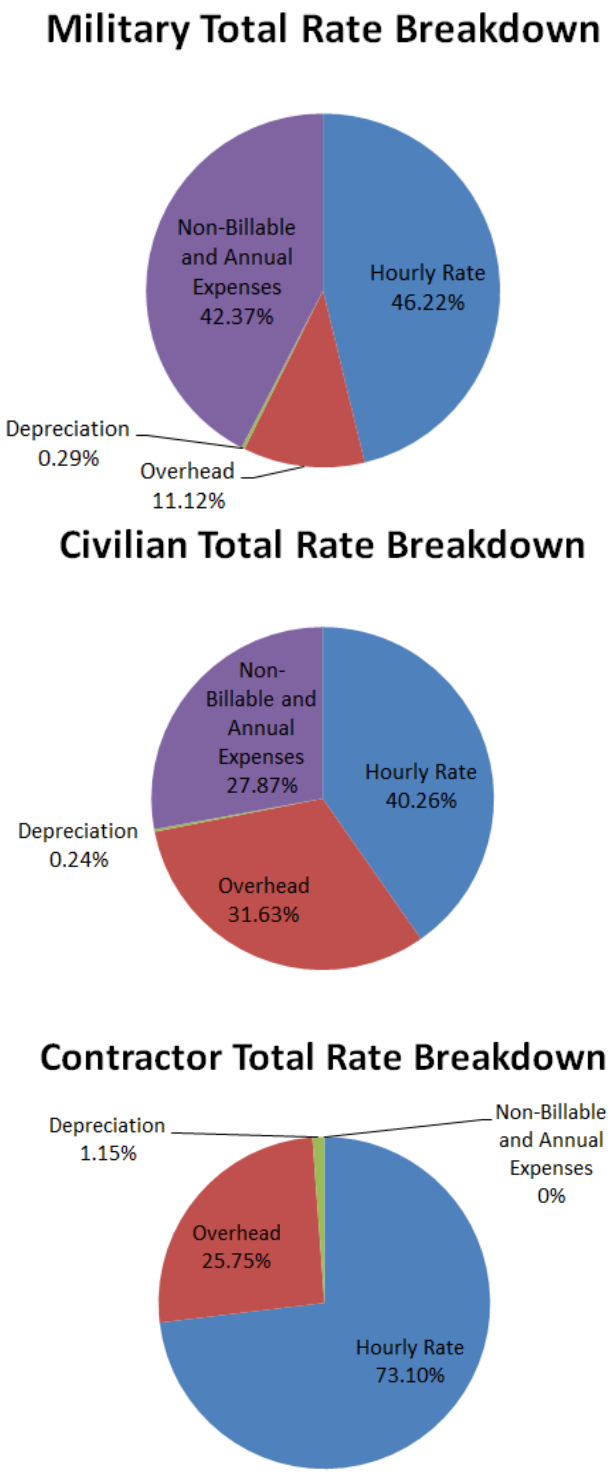

Figure 1. Labor Breakdown by Percentage of Total Burden Labor Rate

B. CONCLUSIONS

When analyzing labor costs, it is important to focus on as many areas of costs and benefits as possible. This report focused primarily with the quantitative economic costs, but there are qualitative costs that managers also need to analyze. The analyzed data in this report is not a substitute for sound managerial judgment to determine the best sources of labor. Also, the blanket application of specific sources of labor is not recommended, as all organizations are different and require different approaches to production. It is recommended that the manager of any organization follow methodical steps in determining the correct mix of labor. When determining labor source, "establish production objectives, formulate assumptions, identify constraints (legal, human resource), compare alternatives after cost estimates, and estimate benefits for each alternative" (American Society of Military Comptrollers, 2011). This report attempted to focus on quantitative economic analysis, but not all labor costs and benefits are measured and assigned a dollar value. Sound economic analysis should include qualitative labor costs such as the administrative burden of removing a worker from employment or the complexity of designing a contract. A qualitative benefit could include the increased average knowledge base of a type of employee, or the employee's ease and flexibility of shifting production priorities. Productivity, available hours, and knowledge base are all employee aspects that have financial value. A separate report that focusses on talent, working relationships, human resources, and flexibility of employment could include this data and attempt to quantify those aspects financially to improve the labor model presented in this report.

This report used a very general approach to direct and indirect cost distribution. It is accepted that not every cost was included and that some costs could be dealt with in a different manner. Such costs could include, but are not limited to, information technology, security, travel, utility, equipment maintenance, training, contract administration, lease, insurance, and military specific G&A headquarter costs. However, the methods of distributing costs and the general approach of this report can provide useful data for future use. This report provides the manager a reference point when accumulating additional expenses and a method to distribute those costs.

The comparison of labor costs is necessary to give the manager data to make sound decisions. The data included in this report demonstrates that the basic cost per hour of an employee goes beyond the basic pay rate. Currently, the aircraft department billing rate at FRCMA Oceana is $99.84, but this represents a selling price to the customer not necessarily a cost rate. This report accumulated data showing the highest labor rate estimated at $76.35. There are several explanations for this difference which can be used for decision making:

1. There are additional non-labor expenses which increase the rate by $23.49. As mentioned in Section V, there are different overhead rates when non-labor overhead is included. When other expenses (such as HRO, utilities, transportation, and material) are included, the indirect overhead rate for civilians increases to $26.14. Additionally, the rate charged to customers is $31.63 and represents the full overhead rate used by FRCMA. Using this full overhead rate increases the $76.35 per hour labor rate to $86.34. The $86.34 charge would represent a 33 percent increase in the total burden rate.[40] This is an increase in cost, and managers should analyze this cost further. The ability to manage such an increase in the labor rate is essential.

2. If the $99.84 is a more accurate cost per hour, this would represent a total burden rate of 324 percent.[41] This is different than the accelerated rate of 153.75 percent used by FRCMA. If the charged rate by FRCMA is equal to the cost experienced by the organization (and the overhead rate is accurate), then there are basic pay expenses and other annual expenses which this report does not include (see Section IV). However, based on the analysis of this report, the labor cost per hour does not equal $99.84. Therefore, using a $99.84 cost per hour is a WCF charge to the customer to not only cover cost, but also to keep the net operating result at zero.

The $99.84 is a charge per hour which also represents a WCF requirement to break even in the long run as detailed in Section II. While direct and indirect costs are included in this charge, there are other WCF specific inputs which affect the per hour

40 $30.74 divided by $86.34 (as detailed in Section IV).

41 $99.84 divided by basic pay rate of $30.74 (as detailed in Section IV).

charge. This is important for managers to understand, in that the ability to compare labor costs and control labor costs may be limited when using this number. Also, it is possible that the rate was formulated using a more complex process than this report.

> The surcharge (or cost recovery) amount is computed first by estimating sales at the latest acquisition cost or the latest repair cost. Sales in this terminology means the estimated dollar value of items from inventory, or 'cost of goods sold' to customers. Next, the cost recovery factor elements (surcharge elements) are estimated. These include the cost of supply operations (payroll, utilities, adjustments, material loss (e.g. depot washout) and obsolescence costs, transportation costs, the AOR recovery amount and any directed adjustments required by Department of the Navy or Department of Defense. These costs are totaled and allocated across the cost of sales as the 'surcharge' amount (Naval Postgraduate School, 2011, p. 115).

To understand the total cost per hour of an employee, an engineering or bottom-up approach to analyzing labor costs may be necessary. The scope of this report did not allow for an analysis of all surcharge elements. This report was an attempt to begin that process, beginning with the most basic elements of the cost per hour of a FRCMA (WCF) employee.

The flexibility of labor must be included in managerial decision making. While the contractor rate calculated here is lower than the civilian and military rates, it does not necessarily mean all work should be contracted out. Contract work is very specific in nature, and the flexibility of contract work may prove too inflexible for some projects. In the same manner, civilian labor is not as flexible as military labor. As demonstrated in this report, overtime labor rates significantly change for civilians. To the contrary, labor rates for military employees go down as the number of available billable hours goes up (when overtime is encountered). In the determination of overhead and depreciation, the direct labor hour was used as a cost driver/allocation base. If the manager decided to use more contract labor, then the number of contract hours would be increased, thus increasing the percentage of overtime and depreciation expense. This would necessarily drive the labor rate up for contractors as demonstrated in this report.

One can argue that the manager should utilize all types of labor. Utilizing only one type of labor based on cost would limit flexibility in production. Though, it is vitally

important to utilize specific labor for specific projects. For those projects where overtime is expected, the utilization of military and contractor labor is recommended. For those projects where the flexibility of work is important, it is recommended that military and civilian labor be used (unless a flexible contract can be negotiated). When budget restraints cause overhead expenses to strain the organization, it is recommended that contract labor be utilized. The important question when such an issue arises is "are labor costs for civilians and military employees being reduced as much as possible?" If there are controls which can reduce the indirect costs, those controls should be utilized as much as possible to maintain the flexibility of various employees. The issue is not just what the drivers of overhead are, but whether the manager can control them. Without control, managers are forced into accepting expenses and may not make the most efficient use of their employee resources.

There are two main concerns with the data and analysis of this report. First, depreciation charges are important to analyze, and this report only uses a surface level analysis of assets to be depreciated. The valuation of the tools utilized by the employees and a proper evaluation of the property are essential to accurately distribute depreciation. The charge for depreciation used in this report is likely less than actual based on the incomplete valuation of PP&E. Including an exhaustive inventory of PP&E, along with the valuation of those assets, would allow a more refined depreciation charge to be applied in the labor model. Second, the overhead rate applied to the military appears low. This report suggests that there are other facility costs and other G&A expenses which would increase this amount. Such costs would include, but are not limited to, higher headquarter G&A, information technology support, travel expenses, administrative supplies, and training expenses. It is a concern that there is a significant difference between the military overhead rate and the civilian overhead rate. The total civilian overhead rate includes overtime and non-labor charges which make comparison of civilian and military overhead rates difficult. Also, there is a question of how the WCF accurately charges overhead when military labor is utilized. Currently, the WCF reimburses the government for the military employees used in production at a civilian wage rate. Based on this report, the overhead rates for civilian and military employees is

not equal. Therefore, while the basic wage rate may be reimbursed, the overhead rate is not an equal translation. A concern also exists that not all overhead utilized by contractors is captured. Production maintenance overhead is also missing from this report, and could be applied to the overhead rate of all three categories of employees. Again, these concerns represent recommendations for further study.

C. RECOMMENDATIONS OF AREAS FOR FURTHER STUDY

It is recommended that FRCSE conduct a strategic review of labor resourcing. This report concentrated on activities within FRCMA Norfolk and Oceana. Though, a larger study of the labor costs for the entire FRC construct is required before any significant labor decisions are made. Decisions on what source to draw labor from occur after research has been conducted at each FRC location. Each location may require different labor sources, and each location may require different mixes of employees to be efficient. Operations research, in combination with business expertise, could provide advanced techniques to help the FRC make better decisions.

By conducting a strategic resource review, the FRC can compare the budgeted or expected labor costs with actual labor costs (not just revenue versus expenses). "Benefit-cost analysis measures the effects of a plan by comparing its expected benefits and costs, which can be quantitative and qualitative…an organization must be concerned with both the quantitative and qualitative costs and benefits" (Hilton, Maher, & Selto, 2008). Further research into all quantitative and qualitative costs must be conducted for strategic resource decisions to be made. Each FRC organization should be analyzed separately to provide the "bottom-up" analysis required. Using labor rate information from one organization on another organization may provide less than optimal results.

Depreciation on all PP&E is required for full labor rate estimating. This report analyzed the plant portion of the PP&E. An inventory of all equipment, to include tools, is required. After the inventory is conducted, a valuation of that inventory is necessary. Finally, the property where the FRC is located needs to be valued. Once these totals are accumulated, a better estimate of the assets can be used for depreciation purposes. Also,

the depreciation methods for the facility may be different than the method for the equipment. It is recommended that further research be conducted on the assets and depreciation methods at FRCMA.

A further analysis of overhead is recommended. Overhead data was estimated based on departmental salaries in this report, but further analysis could produce more accurate results. Further analysis could provide a better method of distributing the contractor portion of overhead than direct labor hours. WCF rates for overhead were used in this report, and further specific analysis of those rates could provide a refinement of those rates. It would be necessary to analyze FRCSE data.

Finally, it is recommended that the transfer fees associated with overhead rates be analyzed. The addition of non-labor and G&A transfer costs generate a $1.99 increase in the overhead rate (from $24.15 to $26.14). When contractor hours are included, this cost transfer increases the rate by $7.06 (37 percent).[42] Understanding the benefits received from those external organizations may provide FRCMA managers the ability to control the costs connected with those benefits.

[42] Indirect overhead rate with transfers, without contractor hours $26.14. Indirect overhead rate without transfers, including contractor hours $19.08. $26.14-$19.08=$7.06; $7.06/$19.08 = 37% increase from indirect with contractor hours.

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APPENDIX A. MILITARY PAY TABLE

BASIC PAY—EFFECTIVE JANUARY 1, 2012											
Pay Grade	2 or less	Over 2	Over 3	Over 4	Over 6	Over 8	Over 10	Over 12	Over 14	Over 16	Over 18
O-10[1]											
O-9[1]											
O-8[1]	9683.10	10000.20	10210.80	10,269.60	10,532.40	10,971.00	11,073.30	11,489.70	11,609.10	11,968.20	12,487.80
O-7[1]	8045.70	8419.80	8592.60	8,730.00	8,979.00	9,225.00	9,509.40	9,792.90	10,077.30	10,971.00	11,725.50
O-6[1]	5963.40	6551.70	6981.30	6,981.30	7,008.00	7,308.60	7,348.20	7,348.20	7,765.80	8,504.10	8,937.60
O-5	4971.30	5600.40	5988.00	6,061.20	6,303.00	6,447.60	6,765.90	6,999.30	7,301.10	7,763.10	7,982.40
O-4	4289.40	4965.60	5296.80	5,370.60	5,678.10	6,007.80	6,418.50	6,738.30	6,960.60	7,088.10	7,161.90
O-3	3771.30	4275.30	4614.60	5,031.00	5,271.90	5,536.50	5,707.80	5,988.90	6,135.60	6,135.60	6,135.60
O-2	3258.60	3711.30	4274.40	4,418.70	4,509.60	4,509.60	4,509.60	4,509.60	4,509.60	4,509.60	4,509.60
O-1	2828.40	2943.90	3558.60	3,558.60	3,558.60	3,558.60	3,558.60	3,558.60	3,558.60	3,558.60	3,558.60
O-3[2]				5,031.00	5,271.90	5,536.50	5,707.80	5,988.90	6,226.20	6,362.40	6,548.10
O-2[2]				4,418.70	4,509.60	4,653.30	4,895.70	5,082.90	5,222.40	5,222.40	5,222.40
O-1[2]				3,558.60	3,800.10	3,940.80	4,084.50	4,225.50	4,418.70	4,418.70	4,418.70
W-5											
W-4	3,897.60	4,192.50	4,312.80	4,431.30	4,635.00	4,836.90	5,040.90	5,348.70	5,618.10	5,874.30	6,084.00
W-3	3,558.90	3,707.40	3,859.50	3,909.30	4,068.90	4,382.70	4,709.10	4,862.70	5,040.60	5,224.20	5,553.60
W-2	3,149.40	3,447.30	3,539.10	3,602.10	3,806.40	4,123.80	4,281.00	4,436.10	4,625.40	4,773.30	4,907.40
W-1	2,764.50	3,061.80	3,141.90	3,311.10	3,511.20	3,805.80	3,943.50	4,135.50	4,324.80	4,473.60	4,610.70
E-9[4]							4,708.80	4,815.60	4,950.00	5,108.10	5,267.70
E-8						3,854.70	4,025.10	4,130.70	4,257.30	4,394.40	4,641.60
E-7	2,679.60	2,924.70	3,036.60	3,185.10	3,300.90	3,499.80	3,611.70	3,810.90	3,976.20	4,089.00	4,209.30
E-6	2,317.80	2,550.30	2,662.80	2,772.30	2,886.30	3,143.10	3,243.30	3,436.80	3,496.20	3,539.40	3,589.80
E-5	2,123.40	2,265.90	2,375.40	2,487.60	2,662.20	2,845.20	2,994.60	3,012.90	3,012.90	3,012.90	3,012.90
E-4	1,946.70	2,046.30	2,157.30	2,266.50	2,363.10	2,363.10	2,363.10	2,363.10	2,363.10	2,363.10	2,363.10
E-3	1,757.40	1,868.10	1,981.20	1,981.20	1,981.20	1,981.20	1,981.20	1,981.20	1,981.20	1,981.20	1,981.20
E-2	1,671.30	1,671.30	1,671.30	1,671.30	1,671.30	1,671.30	1,671.30	1,671.30	1,671.30	1,671.30	1,671.30
E-1[5]	1491.00										

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APPENDIX B. CIVILIAN WORKING GRADE (WG) PAY TABLES

AC-0140R DoD Civilian Personnel Management Service (AU)
Arlington, Virginia 22209-5144 Issue Date: 13 July 2010

SUBJECT: Federal Wage System Regular and Special Production Facilitating Wage Rate Schedules for the Norfolk-Portsmouth-Newport News-Hampton, VA (RUS) Wage Area

TO: Commanding Officers of Military Departments and DoD Component Installations in the Area

The schedules shown below have been established under authority of DoD Instruction 5120.39, dated September 10, 2008, subject to the limitations contained in CPM 2009-25, dated 23 December 2009. Rates are established as required by 5 USC 5343(d), if applicable, and are to be applied in accordance with the provisions of 5 CFR Part 532 to all employees whose official duty station is located within the geographic boundary of the wage area definition shown on the reverse side.

WG WL-WS Grade	WG-Rates 1	2	3	4	5	WL-Rates 1	2	3	4	5	WS-WD-WN Rates 1	2	3	4	5	WD-WN Pay Level
1	12.12	12.53	12.93	13.32	13.72	13.31	13.88	14.44	15.00	15.54	18.69	19.49	20.26	21.07	21.82	
2	13.19	13.72	14.26	14.85	15.40	14.52	15.11	15.73	16.32	16.95	19.63	20.47	21.31	22.11	22.92	
3	14.28	14.88	15.46	16.07	16.69	15.72	16.37	17.03	17.64	18.35	20.52	21.37	22.21	23.10	23.91	1
4	15.19	15.80	16.46	17.15	17.77	16.70	17.42	18.11	18.75	19.57	21.50	22.38	23.28	24.18	25.08	2
5	16.15	16.81	17.50	18.18	18.82	17.77	18.51	19.24	19.98	20.73	22.39	23.33	24.36	25.24	26.17	3
6	17.09	17.84	18.58	19.23	19.94	18.77	19.60	20.34	21.14	21.93	23.40	24.37	25.35	26.31	27.29	4
7	18.06	18.80	19.58	20.32	21.09	19.85	20.68	21.52	22.36	23.19	24.39	25.37	26.36	27.40	28.42	5 1
8	19.00	19.79	20.58	21.37	22.16	20.90	21.77	22.65	23.51	24.45	25.36	26.42	27.48	28.53	29.59	6 2
9	20.00	20.86	21.70	22.53	23.39	21.98	22.94	23.89	24.75	25.76	26.35	27.43	28.59	29.66	30.75	7 3
10	21.03	21.90	22.78	23.66	24.53	23.14	24.10	25.06	26.02	26.98	27.34	28.48	29.62	30.76	31.90	8 4
11	22.08	23.00	23.92	24.84	25.76	24.29	25.31	26.32	27.34	28.34	28.24	29.41	30.58	31.76	32.94	9 5
12	23.10	24.06	25.02	25.99	26.95	25.41	26.47	27.54	28.59	29.65	29.28	30.51	31.75	32.96	34.18	10 6
13	23.98	25.00	26.00	27.01	28.02	26.41	27.51	28.60	29.73	30.84	30.69	31.97	33.22	34.52	35.80	11 7
14	24.83	25.89	26.91	27.94	28.97	27.33	28.49	29.62	30.77	31.91	32.21	33.56	34.89	36.24	37.58	8
15	25.67	26.72	27.80	28.87	29.95	28.24	29.42	30.57	31.78	32.93	33.95	35.37	36.77	38.20	39.59	9
										WS-16	35.90	37.42	38.91	40.41	41.89	
										WS-17	38.15	39.75	41.32	42.93	44.50	
										WS-18	40.60	42.31	44.00	45.67	47.37	
										WS-19	41.56	43.29	45.02	46.75	48.48	

JAMES B. BRADY Order Date: 4 May 2010

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APPENDIX C. CIVILIAN EQUIVALENCY TABLE

APPENDIX B
DEPARTMENT OF DEFENSE WORKING CAPITAL FUNDS
CIVILIAN/MILITARY EQUIVALENCY RATE

Fiscal Year _____

The cost of military personnel assigned to activities financed by a Defense Working Capital Fund (DWCF) is included in the total cost of operations of the Working Capital Fund activities at civilian equivalent rates. Military personnel assigned to DWCF activities are to be costed at civilian equivalent rates, using the rates in the table below.

MILITARY GRADE	CIVILIAN GRADE EQUIVALENT Based on GS Pay Scales	CIVILIAN EQUIVALENT RATE BY(s) 20____
O-9	ES Level III	
O-8	ES Level IV	
O-7	ES Level V	
O-6	GS-15	
O-5	GS-14	
O-4	GS-13	
O-3	GS-12	
O-2	GS-11	
O-1	GS-09	
WO-5	GS-12	
WO-4	GS-12	
WO-3	GS-11	
WO-2	GS-09	
WO-1	GS-09	
E-9	GS-08	
E-8	GS-07	
E-7	GS-06	
E-6	GS-05	
E-5	GS-05	
E-4	GS-04	
E-3	GS-03	
E-2	GS-02	
E-1	GS-01	

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APPENDIX D. SPECIAL WG PAY SCALE FOR FRCMA

Issue Date: April 7, 2011

SUBJECT: Federal Wage System Special Wage Rates for Aircraft Maintenance and Support Positions in the Norfolk-Portsmouth-Newport News-Hampton, Virginia Wage Area

TO: COMMANDING OFFICERS OF MILITARY DEPARTMENTS AND DOD COMPONENT INSTALLATIONS IN THE AREA

REFERENCES: (a) U.S. Office of Personnel Management letter, dated September 23, 2010, which authorized the establishment of special rates for Aircraft Maintenance Positions, including leader and supervisory positions as shown on the reverse side, at the 192nd Fighter Wing Virginia Air National Guard and U.S. Air Force Reserve Unit at Langley AFB, VA, U.S. Army Reserve Commands, 11th Aviation Command, U.S. Army Aviation Logistics School, U.S. Army Research Development and Engineering Command at Fort Eustis, VA, and Department of Navy Fleet Readiness Centers in Virginia Beach and Norfolk, VA. Amended March 28, 2011 to add approved WD and WN employees.
(b) Operating Manual, Federal Wage System, Subchapter S12, Special Rates or Rate Ranges Under the Federal Wage System.
(c) DoD Civilian Personnel Management Service, Wage and Salary Division letter, dated July 18, 2010, Federal Wage System Regular and Special Production Facilitating Wage Rate Schedule (AC-140R) for the Norfolk-Portsmouth-Newport News-Hampton, Virginia Wage Area.

Issued under authority of DoD Instruction 5120.39, dated September 10, 2008, the Federal Wage System Regular and Special Production Facilitating Wage Rate Schedules for the Norfolk-Portsmouth-Newport News-Hampton, Virginia Wage Area (reference (c)) are amended by the following special rates:

WG WL-WS GRADE	WG-RATES 1	2	3	4	5	WL-RATES 1	2	3	4	5	WS-RATES 1	2	3	4	5	WD-WN Pay Level
6	21.57	22.47	23.37	24.27	25.17	23.73	24.72	25.71	26.70	27.69	30.09	31.34	32.59	33.85	35.10	
7	23.27	24.24	25.21	26.18	27.15	25.59	26.66	27.73	28.79	29.86	31.79	33.11	34.43	35.76	37.08	
8	24.97	26.01	27.05	28.09	29.13	27.47	28.61	29.75	30.90	32.04	33.48	34.88	36.28	37.67	39.07	6
9	26.68	27.79	28.90	30.01	31.12	29.35	30.57	31.79	33.02	34.24	35.19	36.66	38.13	39.59	41.06	7
10	28.38	29.56	30.74	31.92	33.11	31.22	32.52	33.82	35.12	36.42	36.89	38.43	39.97	41.50	43.04	8
11	30.08	31.33	32.58	33.84	35.09	33.08	34.46	35.84	37.22	38.60	37.12	38.67	40.22	41.76	43.31	9
12	31.79	33.11	34.43	35.76	37.08	34.96	36.42	37.88	39.33	40.79	37.43	38.99	40.55	42.11	43.67	10
13	33.48	34.88	36.28	37.67	39.07	36.84	38.37	39.90	41.44	42.97	37.80	39.38	40.96	42.53	44.11	11 7
14											38.26	39.85	41.44	43.04	44.63	8
15											38.77	40.39	42.01	43.62	45.24	9
16											39.36	41.00	42.64	44.28	45.92	

R. CRAIG JERABEK
Chief
Wage and Salary Division

Effective Date: The first day of the first pay period on after March 28, 2011
Supersedes Schedule Issued: September 24, 2010

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APPENDIX E. FRCMA NORFOLK FACILITY DATA

NAVSTA NORFOLK VA	N44325	FLTREADCEN MIDLANT DET NORFOLK	SP301	AIMD O2 BUILDING	1280	SF	7/1/2005	$ 100,000
NAVSTA NORFOLK VA	N44325	FLTREADCEN MIDLANT DET NORFOLK	SP304	TEST CELL ELECTRICAL BLDG.	223	SF	7/1/2005	$ 50,000
NAVSTA NORFOLK VA	N44325	FLTREADCEN MIDLANT DET NORFOLK	SP302	AIMD TIRE STORAGE BUILDING	1248	SF	7/1/2005	$ 100,000
NAVSTA NORFOLK VA	N44325	FLTREADCEN MIDLANT DET NORFOLK	SP356	AIMD GSE SHOP	21716	SF	7/1/1987	$ 2,383,000
NAVSTA NORFOLK VA	N44325	FLTREADCEN MIDLANT DET NORFOLK	SP356	AIMD GSE SHOP	21716	SF	7/1/1987	$ 2,383,000
NAVSTA NORFOLK VA	N44325	FLTREADCEN MIDLANT DET NORFOLK	SP369	STORAGE PAD P	1650	SY	7/1/1941	$ 99,800
NAVSTA NORFOLK VA	N44325	FLTREADCEN MIDLANT DET NORFOLK	SP300	NEW MAIN AIMD FRC COMPLEX	140520	SF	7/1/2005	$10,000,000
NAVSTA NORFOLK VA	N44325	FLTREADCEN MIDLANT DET NORFOLK	SP300	NEW MAIN AIMD FRC COMPLEX	140520	SF	7/1/2005	$10,000,000
NAVSTA NORFOLK VA	N44325	FLTREADCEN MIDLANT DET NORFOLK	SP300	NEW MAIN AIMD FRC COMPLEX	140520	SF	7/1/2005	$10,000,000
NAVSTA NORFOLK VA	N44325	FLTREADCEN MIDLANT DET NORFOLK	SP300	NEW MAIN AIMD FRC COMPLEX	140520	SF	7/1/2005	$10,000,000
NAVSTA NORFOLK VA	N44325	FLTREADCEN MIDLANT DET NORFOLK	SP300	NEW MAIN AIMD FRC COMPLEX	140520	SF	7/1/2005	$10,000,000
NAVSTA NORFOLK VA	N44325	FLTREADCEN MIDLANT DET NORFOLK	SP357	GRND SUP SHED EQUIP NORTH	4300	SF	7/1/1987	$ 77,000
NAVSTA NORFOLK VA	N44325	FLTREADCEN MIDLANT DET NORFOLK	SP305	AIMD FLAGPOLE			7/1/2005	$ 5,000
							Total:	$13,274,800

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